

# THE CRIDDLE MIXTURE.

A NEW

## REMEDY FOR GRASSHOPPERS

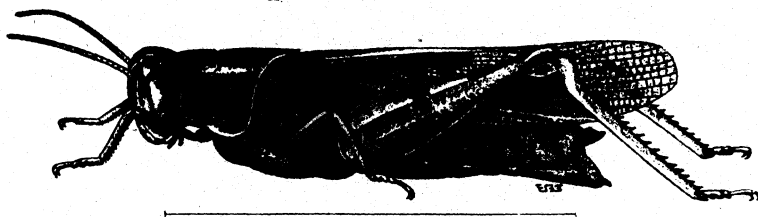
WITH COMMENTS UPON CERTAIN OLD METHODS.

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AGRICULTURAL EXPERIMENT STATION

ST. ANTHONY PARK, MINN.

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There is no question but that plowing, particularly fall plowing, is the best, cheapest, and most effective means in the hands of the farmer for combating grasshoppers, yet farmers who are not planning to plow for crop purposes are not always ready to go to this trouble

and expense until they see some actual damage done by these pests; a statement from an Entomologist that certain stubble fields are riddled with grasshopper eggs does not always influence the owner to take prompt action, and the eggs are allowed to lie unmolested. It is not until these hatch, and the young hoppers becoming quarter or half grown and seek to appease a ravenous appetite by inroads upon the growing grain, that the hitherto indifferent farmer realizes the fact that something must be done immediately to prevent the loss of from 50 to 100 per cent of his crops.

Even then it is not too late, if the farmer takes immediate action, to overcome this small but powerful enemy to agriculture. *He may, if the hoppers are not too large to get out of the way of the plow, say  $\frac{1}{2}$  inch or less, plow the infested land, working from its edge toward the centre. This turns most of the pests under, causing their death.*

If the farmer prefers, or if the grasshoppers have become too large to treat in this way, the hopper-dozer, so fully described in other reports from this Department, may be made use of, or recourse may be had to a poisoned bait, the so-called Criddle mixture, which is herein described.

## THE CRIDDLE MIXTURE.

The difference between this poisoned bait and others consists in the substitution of horse manure for the bran so commonly used hitherto, on the ground that it costs nothing, is generally handy on a farm and is quite as effective as bran, if not more so.

At a meeting of Entomologists at Washington, D. C., the past winter, Dr. Fletcher, the Government Entomologist, of Canada, gave unstinted praise to the use of this compound, and, both at that meeting and in a printed report upon the subject, cited many instances of great

success following its application. (See Report of Experimental Farms for 1901, p. 226.) "It has entirely replaced the cumbersome and inadequate hopper-dozers," said Mr. Fletcher.

### COMPOSITION OF CRIDDLE MIXTURE.

1 part Paris green, 2 parts salt, 40 parts horse manure, by measure. Add enough water to make soft without being sloppy. Scatter it about the fields well, in quantity according to number of grasshoppers. They will be attracted for 40 feet. It is most effective when fresh, but will do excellent work when several weeks old, even after being washed by rain.

A correspondent of Dr. Fletcher's, in speaking of the use of the Criddle Mixture, says: "In this section all used poison, and only a few acres of crop were destroyed. I am convinced that, had we begun the fight earlier, hardly a bushel of grain would have been lost. It is no exaggeration to say that dead locusts could be gathered up in wagon loads, and at times be smelt for half a mile." The same writer states, further, that two men "with horse and rig, kept the locusts from about 600 acres during the entire season." Another correspondent wrote as follows: "For a space of 50 yards from the edge of this crop (wheat), where the remedy had been only once applied two weeks before, the ground was literally strewn with dead grasshoppers, and all along the edge of the headland, where they had gathered during the wet weather, the dead insects were lying in such numbers as to resemble a winrow; on one spot 117 were counted in 18 inches square."

The Minnesota entomologist has not had, of course, an opportunity, since learning of this mixture, to test it here, but there is no question but that, if it is so successful in Manitoba, it would be equally successful here. It certainly is less expensive, and, according to

Dr. Fletcher, much more effective, than hopper-dozer, the use of which has been practically abandoned in that section.

This question probably occurs to the careful farmer: "Will not turkeys and chickens, wandering about the fields, be poisoned by such bait?"

It has already been definitely settled that it is extremely difficult to poison poultry with arsenic. To bring the matter nearer home to the Minnesota farmer, this department of the station has recently made a most severe test, using a full-grown turkey and full-grown and two-thirds grown chickens with most satisfactory results. The conditions were much more severe in this test—which was with confined fowls, lasting over two weeks, and using meal into which some grain was introduced, instead of horse manure—than could possibly exist in the use of the Criddle Mixture, the fowls being obliged to pick their food from this poisoned mess or go without. I do not hesitate to say, then, that the Criddle Mixture is perfectly safe in this connection as far as full-grown fowls are concerned. While we have not, as yet, had an opportunity of determining whether or not greedy young turkeys and chickens would succumb, it is fair to conclude that the use of the Criddle Mixture is also perfectly safe with them, for it must be borne in mind that it is simply the particles of undigested grain which fowls seek in horse droppings, and it must be further remembered that in the majority of cases this mixture would be used in the fields far from the house, and consequently not in situations frequented by young chicks. In response to my question, "How about turkeys and chickens eating the dead grasshoppers?" Dr. Fletcher replied that either these were not eaten, or, if they were, no ill effect followed, because no complaint of this kind had been made. I have no hesitation, therefore, in recommending this method to Minnesota farmers.

## **OTHER METHODS OF KILLING GRASSHOPPERS.**

**Hopper-Dozers.** Although the entomologist can furnish oil in limited quantities during the coming summer to farmers who own hopper-dozers, and there is no doubt but that they are useful in emergencies, I am convinced, from work done with dozers last year in Polk county, that the use of the Criddle Mixture will supersede the hopper-dozer, because of the cheapness of the method and ease with which the poison can be prepared and distributed.

The method to be followed in securing the oil is as follows: Obtain from your county commissioner an order for oil upon some dealer in your neighborhood. Orders in blank form were issued from this office to the commissioners a year ago. Upon presentation of this order at the store, oil will be furnished you, the dealer keeping your receipt and the order to serve as a voucher when he sends his bill to the entomologist. All bills for oil must be presented before December 1st of the year in which the oil is sold. Firms furnishing oil free to farmers without a signed order from a county commissioner do so at their own risk. Hopper-dozers can be used to best advantage when the day is bright and warm. A little water placed in the hopper-dozer with the oil does not impair its value as an insecticide and will enable it to go farther. When grasshoppers have obtained their wings the hopper-dozer is almost useless.

**Sowing a Strip of Rye Round the Edge of a Wheatfield** is claimed to be a simple way to keep grasshoppers at the edge of the field. The rye grows more rapidly than the wheat, and will stand a lot of "eating down." This keeps the locusts in a comparatively narrow area, where they can be easily handled. (From Canadian Report.)

**Plowing a Strip of Land** between a crop and an advancing army of quite young hoppers will sometimes turn their march and prevent loss.

**To Prevent Crickets and Grasshoppers from Eating Binder Twine in the Field:** Soak balls of twine in solution of 2 lbs. bluestone dissolved in 12 gallons of water, for half an hour and then dry thoroughly. (H. Vane, in Canadian Report.)

It must be remembered that it is hard to dissolve bluestone; it should therefore be placed in the water quite a long time before the liquid is to be used.

A farmer here suggests soaking balls of twine in kerosene. This might be effective.

### **THE NEW GRASSHOPPER LAW.**

It is manifestly discouraging to any farmer living in a grasshopper district to have locusts, hatched in neighboring neglected stubble owned by speculators or parties who are indifferent to community interests, pour in upon his well tilled fields and destroy in a few days the result of many weeks of hard work. Some law has long been sought which will compel the property owners to plow stubble land so infested with grasshopper eggs as to be declared a menace to surrounding crops.

A bill leading to such a law was carefully framed by a prominent St. Paul lawyer this last winter, declared constitutional by the Attorney General of the State and passed both houses without apparent opposition. Every point of the law was carefully considered by its framer, and no question exists as to enforcing its provisions. Space cannot be given in a bulletin of this nature to print the law in full; it will be published, however, in the next annual report.

Complaint of infested land should be made to the State Entomologist or to the Board of County Commissioners, or both, accompanied by specimens of eggs. The Entomologist examines the land, and, if the conditions justify it, he reports to that effect to the Board of County Commissioners, who, after consideration of the matter at a regular or special meeting, cause a notice

to be served upon the holder or lessee of the infested land, requesting him to plow within a certain time. If he fails to do this, the County plows his land, and, if said plowing benefits him in raising of crops immediately after, sues him to recover moneys expended.

Inasmuch as grasshopper eggs hatch, in ordinary seasons, early in May, and since nearly three weeks must elapse, in accordance with this law, from the time of making the complaint to the time when the order to plow can be issued, it would seem best to make complaints in the fall, after grasshoppers have finished laying.

Mr. Ruggles, an assistant in this department, was in the field in Polk County in latter part of April in response to a complaint from that section, and found many eggs in some localities; hence, it is safe to predict that people in that neighborhood will have some trouble from grasshoppers this season.

Eggs brought to St. Anthony Park from Polk County hatched May 2d, in the laboratory, probably several days earlier than they would have hatched if left in the field.

It is with the hope that some of the suggestions made herein will be timely and useful that this publication is issued as a Press Bulletin.

A copy of this bulletin will be sent to any citizen requesting the same.

F. L. WASHBURN,  
State Entomologist.





